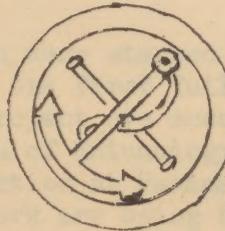


MALARIA CONTROL IN WAR AREAS

MONTHLY PROGRESS REPORT

JULY 1942



FEDERAL SECURITY AGENCY
U.S. PUBLIC HEALTH SERVICE
MALARIA CONTROL IN WAR AREAS
605 VOLUNTEER BUILDING
ATLANTA, GA.

SYLLABUS

The Malaria Control in War Areas program continued to expand during July. Larvicultural projects are now in operation in 126 war areas providing protection for 545 war establishments in 16 states, the District of Columbia and Puerto Rico. A total of 3070 people are employed. Entomological reports indicate that in only 13 per cent of the zones under control are the densities of A. quadrimaculatus high enough to cause concern. These zones include a number where control work is not fully organized. Breaks in technique which have allowed these high densities are being corrected.

During July an office was established at Berkeley, California to supervise malaria control work in war areas in California and Oregon.

A large drainage project at Pine Bluff, Arkansas and the inauguration of experimental projects at Stuttgart and Newport, Arkansas for controlling malaria by destruction of house-frequenting adult A. quadrimaculatus with pyroicide were among the noteworthy activities of the MCWA program during July.

Procurement of certain types of equipment is being retarded by the need for increasingly higher priority ratings. Administrative changes have speeded procurement in general. The program is now far enough advanced that most requirements can be anticipated and fewer matters will need to be handled as emergencies.

Aedes aegypti control projects were started in three new areas during July. The results of the first full month of operation of the Key West, Florida project are encouraging. A cooperative project with the Bureau of Entomology and Plant Quarantine to control dogfly production at Panama City, Florida was inaugurated. Funds for this work are being furnished by the Army.

Further plans have been made for the fall thick film survey and for the statistical analysis of the results and for major drainage work to be done after the end of the mosquito breeding season.

A total of approximately \$292,000 of Public Health Service funds was encumbered during the month, of which almost ninety per cent was for personal services.

TABLE I

MALARIA CONTROL IN WAR AREAS
USPHS LARVICIDE AND MINOR DRAINAGE PROJECTS

July 1 - 31, 1942

STATE	Areas in Operation	War Establishments Protected	LARVICIDAL WORK			OTHER WORK			Total Man Hours
			Larvicide Used Oil Gals.	Paras Green Lbs.	Ditches Lin.Ft.	Surfaces Treated Ponds Sq.Ft.	Ditching & Cleaning Lin.Ft.	Ditches Lin.Ft.	
Alabama	5	28	8,519	---	98,000	10,028,920	27,187	23,472	408,240
Arkansas	25	5,178	866	2,402,958	142,763,446	129,824	13,029	706,187	21,991
Florida	38	23,653	8,511	2,739,112	181,960,156	423,950	109,346	779,615	43,935
Georgia*	8	32	52	16,116	331,724	143,680,760	50,005	291,089	7,514,941
Illinois	2	6	1,121	---	183,345	289,050	---	890	653,893
Indiana	1	1	---	---	---	---	---	19,250	203,000
Kentucky	4	20	5,551	---	30,386	27,858,466	1,800	5,900	1,087,110
Louisiana	7	41	101,592	5,747	15,092,846	348,289,089	2,400	32,100	383,000
Mississippi	9	23	16,456	---	2,793,896	5,745,805	117,986	425,180	2,629,552
Missouri	4	11	567	128	27,875	6,633,825	150,150	5,800	197,720
North Carolina	9	19	17,956	---	6,089,020	25,124,096	150,288	929,952	2,252,512
Oklahoma	4	10	4,117	---	160,853	2,936,627	20,605	24,483	645,944
Puerto Rico	7	17	390	3,616	1,773,453	95,288,915	75,821	48,436	647,800
South Carolina	19	42	51,323	114	5,045,923	99,041,126	686,349	804,222	666,507
Tennessee	9	32	14,017	---	1,577,555	28,337,256	52,091	49,509	127,998
Texas	12	18	32,541	2,000	4,552,592	76,510,159	189,816	130,058	6,422,344
Virginia	4	10	859	---	1,213,193	14,455,035	53,060	621,803	2,638,170
Total	125	537	293,899	37,398	14,112,741	1,108,946,731	1,983,322	3,533,629	10,964,503
									520,518

* Estimated

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During July, malaria mosquito control work was in operation in 126 areas including 545 war establishments. A total of 3070 persons were employed on the program on July 31. Twenty-seven new areas comprising seventy-eight war establishments were added to the program during the month and the number of employees increased by about 450.

Larvicidal Program - About 300,000 gallons of oil and 37,000 pounds of paris green were used to control malaria mosquito breeding in 8,300 miles of ditches and 25,000 acres of ponds. The need for larvicing was eliminated by minor drainage operations on 370 miles of ditches and streams. About 670 miles of streams, and 950 acres of ponds were cleared to facilitate larvicidal operations. More than 500,000 man hours of labor were required for this work. Table I shows detailed information on the progress of the larvicidal and minor drainage program by states.

Entomological inspections indicate that the density of Anopheles quadrimaculatus in the vicinity of 87 per cent of the war establishments is not sufficiently high to cause concern. The remaining 13 per cent include those establishments where control was unsatisfactory or where control projects, though warranted, have not yet started operation. The principal problem areas are in states bordering the Mississippi River where extensive swamps particularly favorable for Anopheles quadrimaculatus abound and where control involves a variety of problems.

Major Drainage - The largest drainage project yet undertaken in the Malaria Control in War Areas program was started at Pine Bluff, Arkansas during July and the major part of the work was completed during the month. About 8,000 feet of main ditch were blasted in two weeks using some 18,000 pounds of dynamite. Already about 90 per cent of the water area of a 300 acre swamp, which had been a prolific breeding place of Anopheles quadrimaculatus, has been eliminated and the mosquito catches in the vicinity of the nearby Pine Bluff Arsenal have decreased by about 75 per cent. With the completion of the lateral drains even greater reductions may be expected. By using dynamite this work was done much more quickly and cheaply than would otherwise have been possible and the need for large, continuing expenditures for larvicidal treatment was eliminated.

The various states are perfecting plans for essential drainage work to be undertaken during the winter months when larvicidal work is unnecessary. This work will include some under-

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ground tile drainage and some permanent ditch lining as well as the more common open earth ditches. Arrangements have been made in some areas to have the local authorities and the Army fill some of the breeding places which can not be drained economically.

Adult Mosquito Destruction - In the Stuttgart and Newport areas in Arkansas, malaria mosquito control projects are being started which will depend primarily on destruction of infected, house-frequenting, adult mosquitos by pyrethrum extract. These areas are in the rice field section of Arkansas and surveys indicated that adequate control of malaria mosquito production by larvicultural methods would be impracticable. The method of control to be used is experimental in that it has never before been tried on a similar scale in this country. For this reason unusually complete records will be kept. Thick film blood indexes and malaria case histories of each individual inhabitant of the control area were taken before work started and blood indexes will be taken again at the end of the mosquito breeding season. Additional blood indexes will be taken in adjacent areas beyond the control zones to check the effectiveness of the control work. The Army is experimenting with similar measures within the military reservations, and reports on the progress and effectiveness of the control work will be exchanged by the Army and the Public Health Service. Some larvicultural and minor drainage work will be done in addition to the adult spraying program.

Administration - A number of administrative changes were made during July which accelerated the handling of property accounts, procurement, and personnel recruiting. The program has now progressed far enough that many needs, which formerly had to be treated as emergency matters, can be anticipated and dealt with in a more nearly routine fashion.

Each State Health Department cooperating with the Malaria Control in War Areas program has set aside a special fund for use in making emergency expenditures for supplies, equipment, or other needs of the malaria control program. Although the amounts provided are not large as compared with the total expenditures on the program, the existence as such funds should greatly facilitate the work.

A new field office was established in Berkeley, California during July under the direction of the noted malariologist, Senior Surgeon (R) Stanley Freeborn to supervise malaria mosquito control work in war areas in California and Oregon. Larvicultural projects are to be started in two areas as quickly as equipment can be obtained and entomological inspections will be started in two other areas to determine the need for larvicultural control.

Equipment - Shortages of trucks and other vehicles continue to impede the program although 26 used trucks were obtained from the Army. A total of 381 trucks and cars are now in operation, an increase of 43 during the month. At least 170 additional

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motor vehicles are needed. A few other pieces of equipment, notable power sprayers and dusters, are not being delivered as rapidly as was expected and delivery of almost all supplies and equipment is being retarded. Increasingly higher priorities are needed for prompt delivery. One hundred and fifty bicycles have been purchased for the use of inspectors in order to reduce the need for motor vehicles. State and local governments have loaned about 25 cars and trucks for use on the program.

Personnel - The difficulty of obtaining technical personnel is increasing steadily. The problem is no longer one of obtaining experienced and well-trained men, but one of obtaining even untrained and inexperienced technically educated men. In Louisiana 15 trained entomological inspectors resigned in one week. Some 25 new engineers are needed. Civil Service lists are being examined and various other methods are being used to replace men resigning or being called to military service and to recruit new men.

Aedes aegypti control was started in Miami, Florida; Charleston, South Carolina; and Brownsville, Texas; and projects will be inaugurated at Houston, Galveston, and Corpus Christi during the coming month. Local officials are cooperating wholeheartedly in this work by furnishing funds, office and storage space, personnel, and equipment, and by passing ordinances declaring the maintenance of actual or potential Aedes aegypti breeding places a public nuisance.

The Aedes aegypti control project at Key West, Florida, completed its first full month of operation with encouraging results. The percentage of premises on which Aedes aegypti were found to be breeding has been reduced from almost 30 to less than 10 and, whereas these mosquitoes were formerly a source of considerable annoyance, the lack of adult mosquitoes is now the subject of much favorable comment from local residents. The majority of the residents are quite cooperative although the inspections entail the entering and careful searching of homes for breeding places. The Navy is supplying personnel for work not only within the Naval Reservation but in adjacent civilian areas and the Florida Health Department also is furnishing personnel and funds.

Dogfly Control - The dogfly control project at Panama City, Fla., which was requested by the Army, was started during July. Funds for the work are being furnished by the Army and the control work is being done cooperatively by the Bureau of Entomology and Plant Quarantine (U.S.D.A.) and the Public Health Service under the immediate direction of Dr. Samuel W. Simmons of the B.E. & P.Q. Delays in obtaining delivery of equipment are hampering the work.

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Blood Index - Plans for the fall thick film survey have been further advanced by conferences with members of eleven of the cooperating State Health Departments. Conferences with Statistician Elliott H. Pennell, have helped to clarify some of the statistical aspects of the survey.

The educational program is continuing under the direction of Dr. Mayhew Derryberry in 26 counties in the Southern States.

Special investigations were made during the month at a number of places outside what is usually considered to be the malarious portion of the country. Fort Dix, N.J.; Fort DuPont, Del.; and several military areas in New England have been investigated by staff entomologists to determine whether or not Anopheles quadrimaculatus were present in important numbers. A special investigation of the zone around a Memphis, Tennessee aircraft plant was made which located a large uncontrolled breeding area. An emergency dusting program rapidly reduced the high Anopheles quadrimaculatus densities previously found at this important war industry.

Extensive surveys are being continued in the vicinity of the Philadelphia Navy Yard and the New Orleans shipyards to determine the extent and seriousness of the pest mosquito problem. Additional reports have been received of war industries being forced to stop night work because of swarms of pest mosquitoes.

Expenditures - Slightly less than \$300,000 of Public Health Service Funds were encumbered during July. The approximate amounts were as follows:

.01	Personal Services	\$260,360
.02	Travel	5,000
.04	Communication Services	1,150
.05	Rent	650
.07	Other Contractual Services	1,285
.08	Supplies and Materials	13,375
.09	Equipment	10,200
	Total	<u>\$292,020</u>

Table II summarizes data on number of employees and payrolls by states. The figures shown above for supplies and materials are low because many of the bills for larvicultural oil bought on T.P.S. contract have not yet been presented.

TABLE NO. 2

MALARIA CONTROL IN WAR AREAS

NUMBER OF PERSONNEL ON DUTY ON JULY 31, 1942 AND TOTAL PAYROLL FOR MONTH OF JULY

STATE	TYPE OF PERSONNEL						TOTAL No.	TOTAL Pay	Percent of Total Pay
	Commissioned No.	Prof. & Sci. No.	Sub-prof Pay No.	C. A. F. Pay No.	Custodial Pay No.	No.			
Alabama	8	1,032.28	2	336.66	127	9,886.29	139	11,463.23	4.5
Arkansas	5	1,141.96	11	2,355.00	2	284.66	159	11,009.45	5.8
California	--	--	--	--	--	--	177	13,792.07	0.0
Florida	9	1,822.16	13	1,698.32	3	352.66	159	13,813.38	476.76
Georgia	14	1,044.98	25	3,044.98	3	352.66	54	4,712.83	0.2
Illinois	11	1,475.00	11	1,475.00	3	336.66	18	1,211.50	3.1
Indiana	2	216.66	2	167.32	1	120.00	8	508.00	1.4
Kentucky	7	750.31	26	903.32	2	336.66	47	2,562.00	2.7
Louisiana	949.96	3,173.32	3	336.66	341	27,993.82	376	32,453.76	12.5
Mississippi	5	982.30	12	1,784.70	1	120.00	144	12,407.50	2.1
Missouri	5	982.30	4	616.66	2	336.66	24	2,389.66	5.2
North Carolina	8	1,941.61	9	--	3	339.16	282	25,345.98	35
Oklahoma	1	166.66	2	--	1	120.00	38	2,695.00	1.2
South Carolina	8	1,692.61	18	1,466.66	1	456.66	505	39,350.63	17.0
Tennessee	7	1,366.58	5	2,889.96	3	456.66	74	5,353.64	3.3
Texas	12	2,399.92	25	1,333.22	4	591.66	271	20,625.15	1.1
Virginia	5	999.97	13	3,957.46	2	336.66	86	7,676.83	1.2
Puerto Rico (2)	6	--	6	--	5	--	267	--	0.2
Dist. of Col.	--	--	2	270.00	1	96.00	4	443.00	0.3
Aedes Aegypti	--	--	--	--	--	--	7	809.00	0.2
Florida	--	--	--	--	--	--	312	27,574.19	10.6
Texas	--	--	--	--	--	--	106	10,572.79	4.1
H.Q. & Dist. (3)	18	5,145.67	19	4,048.45	8	1,164.98	33	4,240.64	0.2
Total	21	6,253.03	111	21,461.74	219	29,461.08	79	9,758.72	1.8
Percent of Tot.	0.7	2.4	3.6	8.2	7.1	11.3	2.6	3.8	0.8
								74.3	5.9
								100	100

(1) Includes Entomological Inspectors

(2) No payroll figures available for Puerto Rico

(3) Includes Headquarters and District offices and those employees temporarily attached to Headquarters office pending assignment to States.

